Permit Fact Sheet

General Information

Permit Number:	WI-0021067-11-0	
Permittee Name:	CITY OF SPOONER	
Address:	P O Box 548 515 N. Summit Street	
City/State/Zip:	SPOONER WI 54801	
Discharge Location:	SE ¼ of Sec 36, T39N-R13W and NE ¼ NE ¼ of Sec 1, T38N-R13W	
Receiving Water:	The groundwater of the Shell Lake and Upper Yellow River Watershed within the St. Croix River drainage basin in Washburn County	
Design Flow(s)	Daily Maximum	0.72 MGD
	Weekly Maximum	0.523 MGD
	Monthly Maximum	0.437 MGD
	Annual Average	0.375 MGD
Significant Industrial Loading?	No	
Operator at Proper Grade?	Yes	
Approved Pretreatment Program?	N/A	

Facility Description

The City of Spooner owns and operates a domestic wastewater treatment system. The plant designed to treat 375,000 gallons per day, currently treats an average of 215,000 gallons per day (2017-2021 data). The treatment unit consists of four aerated lagoons and six seepage cells. The four aerated lagoons consist of two parallel sets of two lagoons each, operated in series, with recirculation capability. Naturally occurring bacteria and micro-organisms already found in the wastewater break down the organic matter in the waste. The treated water (called effluent) is discharged to the seepage cells. The sandy soil in the bottom of the seepage cells helps filter the water further, as it percolates through the soil and eventually reaches the groundwater. Nine monitoring wells placed around the perimeter of the system are used to monitor any localized groundwater impacts.

Substantial Compliance Determination

	Compliance?	Comments
Discharge limits	YES	No effluent limit exceedances in the last permit term.
Sampling/testing requirements	YES	
Groundwater standards	NO	During current permit term, Enforcement Standards for Ammonia have been exceeded slightly at MW-808, and nitrate/nitrite enforcement standard was exceeded once at MW-806, but generally there has been a decreasing trend, and both these wells are non POSA wells.
Reporting requirements	YES	All required reports were submitted, although 3400-49 Land Characteristic Forms were late for 2017, 2018, and 2020.
Compliance schedules	YES	There were no schedule requirements in the past permit.
Management plan	YES	Land Management Plan submitted February 7, 2018. Plan details operations/maintenance of Seepage Cells and indicates seepage cells operating well below design loading rates.
Operator at proper grade	YES	Three operators certified and current in subclass A4 (Ponds, Lagoons, and

		Natural Systems). At least one operator needs to be certified in subclass SS (Sanitary Sewage Collection System) by the end of the next permit term.	
Current Plant Subclass	A4, Stabilization Ponds and Aerated Lagoons and SS. Sanitary Sewage Collection System		
Other	N/A	Well run facility that has made recent improvements in collection system and attainment of GW standards.	
Enforcement considerations	None		
In substantial compliance?	YES		
	Concurrence: Arthur C. Ryzak, Wastewater Engineer		Date: January 25, 2022

Sample Point Designation		
Sample Point Number	**Discharge Flow, Units, and Averaging Period**	**Sample Point Location, WasteType/sample Contents and Treatment Description (as applicable)**
701	**INFLUENT** An average of 0.215 MGD (January 2017 to December 2021)	Representative samples shall be taken immediately after the V-Notch weir in the north end of the blower building.
001	**EFFLUENT** An average of 0.215 MGD (January 2017 to December 2021)	Representative effluent sampling shall be collected in the monitoring building prior to discharge to the seepage cells.
002	**SLUDGE** Last removed June 2010	Representative samples shall be collected from the aerated lagoons at a time and in a manner appropriate for the test method.
101	**INPLANT** Flow is not a required parameter	In plant recording of precipitation.

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
GW Elevation	805	MW-805	Side gradient well located approx. 1,000 feet east of blower building.
	808	MW-808	Side gradient well located west of seepage cell #5 and north of MW-809
Seepage Cells	806	MW-806	Down gradient well located north of seepage cell #1
	807	MW-807	Down gradient well located north of seepage cell #3
	809	MW-809	Side gradient well located west of seepage cell #5 and south of MW-808
	810	MW-810	Mid gradient well, downgradient of seepage cell #6, but upgradient of the other cells, is located west of seepage cell #6
	811	MW-811	Mid gradient well, downgradient of seepage cell #6, but upgradient of the other cells, is located west of seepage cell #6 and south of MW-810
	812	MW-812	Background well used to calculate PALs - Upgradient of seepage cell #6, located east of seepage cell #6

Sample Point Designation For Groundwater Monitoring Systems			
System	**Sample Pt Number**	**Well Name**	**Comments**
	813	MW-813	Down gradient well located west of seepage cell #4

1 Influent - Proposed Monitoring

Sample Point Number: 701- INFLUENT PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Continuous	
BOD5, Total		mg/L	Weekly	Grab	
Suspended Solids, Total		mg/L	Weekly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab	
Nitrogen, Organic Total		mg/L	Monthly	Calculated	Organic Nitrogen = TKN (mg/L) - Ammonia Nitrogen (mg/L)

Changes from Previous Permit:

No changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

Explanation of Limits and Monitoring Requirements

Influent monitoring is needed to assess loading to the facility and treatment performance. The required parameters and sampling frequency are appropriate for a land treatment system (ch NR 206, Wis. Adm. Code).

2 Inplant - Proposed Monitoring and Limitations

Sample Point Number: 101- GENERAL PLANT

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Precipitation		in/day	Daily	Measure	

Changes from Previous Permit:

No changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

Explanation of Limits and Monitoring Requirements

This is an operational sample point that will appear on the eDMR. This sample point and requirements have not been included in the permit requirements.

Precipitation – Measuring wet weather events is a tool that assists the facility in maintaining a healthy treatment system. The permittee obtains precipitation data the University of Wisconsin - Madison Spooner Agricultural Research Station, a National Weather Service Reporting Station, located approximately one mile from the wastewater treatment facility.

3 Land Treatment – Proposed Monitoring and Limitations

Sample Point Number: 001- EFFLUENT TO SEEPAGE CELLS

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Flow Rate		MGD	Daily	Total Daily	
CBOD5	Monthly Avg	45 mg/L	Weekly	Grab	
Suspended Solids, Total		mg/L	Weekly	Grab	
pH Field		su	Weekly	Grab	
Nitrogen, Total Kjeldahl		mg/L	Monthly	Grab	
Nitrogen, Nitrite + Nitrate Total		mg/L	Monthly	Grab	
Nitrogen, Ammonia (NH3-N) Total		mg/L	Monthly	Grab	
Nitrogen, Organic Total		mg/L	Monthly	Calculated	Organic Nitrogen = TKN (mg/L) - Ammonia Nitrogen (mg/L)

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total Dissolved		mg/L	Monthly	Grab	
Chloride		mg/L	Monthly	Grab	

Changes from Previous Permit:

No changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

Explanation of Limits and Monitoring Requirements

All requirements for land treatment of municipal wastewater are determined in accordance with NR 206 Wis. Adm. Code. All categorical limits are based on NR 206.08(1) Adm. Code. More information on the limitations can be found in the "City of Spooner – Land Disposal System Evaluation Report – WPDES Permit # WI-0021067" memo dated November 16, 2021.

CBOD5 – Groundwater dischargers don't need to apply to receive a CBOD variance, the City successfully showed during the application process for the ninth reissuance (May 2014) that the BOD5 data was flawed as the result of being inflated by at least partial nitrification that occurs in the BOD5 test. Nitrification gives erroneously high results therefore falsely indicating noncompliance.

Total Nitrogen – The seepage system was installed prior to December 1990; therefore, the Total Nitrogen standard of 10 mg/L is not applicable (NR 206.008(1)).

Sampling Frequency - The "Monitoring Frequencies for Individual Wastewater Permits" guidance document (April 12, 2021) recommends that standard monitoring frequencies be included in individual wastewater permits based on the size and type of the facility, in order to characterize effluent quality and variability, to detect events of noncompliance, and to ensure fairness and consistency in permits issued across the state. Guidance and requirements in administrative code were considered when determining the appropriate monitoring frequencies for pollutants that have final effluent limits in effect during this permit term.

Permitted monitoring frequencies fall below the standard monitoring frequencies outlined in the guidance document. Section NR 205.066(1) Wis. Adm. Code allows sampling frequency to be set on a case-by-case basis. The permittee demonstrates a history of consistent compliance with existing permit limits. Data submitted during the previous permit term continues to show consistent compliance with permit limitations, and the set monitoring frequencies are consistent with requirements of state code. The current monitoring frequencies shall continue this permit term. If performance levels begin to vary during the permitted term, the department may re-evaluate current sampling frequencies and implement more frequent monitoring via permit modification or at permit reissuance.

4 Groundwater – Proposed Monitoring and Limitations

4.1 Groundwater Monitoring System for Seepage Cells

Location of Monitoring system: Surrounding Seepage Cells and Aerated Lagoons.

Wells to be Monitored: MW-806, MW-807, MW-809, MW-810, MW-811, MW-812, MW-813

Well Used To Calculate PALs: MW-812

Point of Standards Application Well(s): None

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly
Nitrogen, Nitrite + Nitrate (as N) Dissolved	mg/L	2.0	10	Quarterly
Chloride Dissolved	mg/L	125	250	Quarterly
Solids, Total Dissolved	mg/L	450	N/A	Quarterly
pH Field	su	8.6	N/A	Quarterly
Nitrogen, Total Kjeldahl Dissolved	mg/L	*****	N/A	Quarterly
Nitrogen, Ammonia Dissolved	mg/L	0.97	9.7	Quarterly
Nitrogen, Organic Dissolved	mg/L	2.3	N/A	Quarterly

Changes from Previous Permit:

- Monitoring wells 805 and 808 have been separated from the other wells into a separate monitoring table due to a reduction in sampling parameters.
- The Preventative Action Limit for Total Dissolved Solids was adjusted.
- The parameters dissolved alkalinity and total hardness monitoring have been removed this permit term.

Explanation of Limits and Monitoring Requirements

Groundwater limits and requirements are determined in accordance with ch NR 140 Wis. Adm. Code. Preventative Action Limit (PAL) values are established per ch NR 140.20 Wis. Adm. Code. For more information please refer to the "City of Spooner – Land Disposal System Evaluation Report – WPDES Permit # WI-0021067" memo dated November 16, 2021.

The PALs and Enforcement Standard (ES) limits will remain the same except for one parameter, Total Dissolved Solids.

Parameter	Previous Permit		Reissued Permit	
	Preventive Action Limit	Enforcement Standard	Preventive Action Limit	Enforcement Standard
Solids, Total Dissolved	457 mg/L	N/A	450 mg/L	N/A

Background (PAL) Well – Historically Well 805 has been used to determine the PAL. It was determined in the groundwater evaluation that well 805 is side gradient and 812 is upgradient. Well 812 shows a representative picture of the background groundwater levels. The well was used with 805 to calculate PALs for this issuance and will be used as the single background well in future reissuances.

Total Dissolved Solids - PAL values were recalculated and adjusted per ch NR 140.20 Wis. Adm. Code.

Total Alkalinity as CaCO3 and **Total Hardness as CaCO3** – Information provided by the parameters is no longer needed by the department to determine groundwater compliance.

4.2 Groundwater Monitoring System for GW Elevation

Location of Monitoring system: Monitor for only depth to groundwater and groundwater elevations.

Wells to be Monitored: MW-805, MW-808

Parameter	Units	Preventative Action Limit	Enforcement Standard	Frequency
Depth To Groundwater	feet	*****	N/A	Quarterly
Groundwater Elevation	feet MSL	*****	N/A	Quarterly

Changes from Previous Permit:

- Wells 805 and 808 have been separated from the other wells are now identified under a new monitoring table due to a reduction in sampling parameters
- Depth to groundwater and groundwater elevation are the only parameters required.

Explanation of Limits and Monitoring Requirements

Due to the location relative to the land disposal system, wells 805 and 808 need only to be sampled for depth to groundwater and groundwater elevation. Groundwater limits and requirements are determined in accordance with ch NR 140 Wis. Adm. Code. For more information, please refer to the "City of Spooner – Land Disposal System Evaluation Report – WPDES Permit # WI-0021067" memo dated November 16, 2021.

5 Land Application - Proposed Monitoring and Limitations

Municipal Sludge Description						
Sample Point	**Sludge Class (A or B)**	**Sludge Type (Liquid or Cake)**	**Pathogen Reduction Method**	**Vector Attraction Method**	**Reuse Option**	**Amount Reused/Disposed (Dry Tons/Year)**
002	B	Liquid	Sludge is not expected to be removed this permit term.			
Does sludge management demonstrate compliance? Yes						
Is additional sludge storage required? No						
Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No, the most recent sample (2020) for the municipal well system was below the limit of detection. If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in landapplying sludge from this facility						
Is a priority pollutant scan required? No Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD.						

Sample Point Number: 002- Lagoon Sludge

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Solids, Total		Percent	Once	Composite	
Arsenic Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Arsenic Dry Wt	High Quality	41 mg/kg	Once	Composite	

Monitoring Requirements and Limitations					
Parameter	**Limit Type**	**Limit and Units**	**Sample Frequency**	**Sample Type**	**Notes**
Cadmium Dry Wt	Ceiling	85 mg/kg	Once	Composite	
Cadmium Dry Wt	High Quality	39 mg/kg	Once	Composite	
Copper Dry Wt	Ceiling	4,300 mg/kg	Once	Composite	
Copper Dry Wt	High Quality	1,500 mg/kg	Once	Composite	
Lead Dry Wt	Ceiling	840 mg/kg	Once	Composite	
Lead Dry Wt	High Quality	300 mg/kg	Once	Composite	
Mercury Dry Wt	Ceiling	57 mg/kg	Once	Composite	
Mercury Dry Wt	High Quality	17 mg/kg	Once	Composite	
Molybdenum Dry Wt	Ceiling	75 mg/kg	Once	Composite	
Nickel Dry Wt	Ceiling	420 mg/kg	Once	Composite	
Nickel Dry Wt	High Quality	420 mg/kg	Once	Composite	
Selenium Dry Wt	Ceiling	100 mg/kg	Once	Composite	
Selenium Dry Wt	High Quality	100 mg/kg	Once	Composite	
Zinc Dry Wt	Ceiling	7,500 mg/kg	Once	Composite	
Zinc Dry Wt	High Quality	2,800 mg/kg	Once	Composite	

Changes from Previous Permit:

The facility is not expected to remove sludge during this permit term. Because sludge is not expected to be removed PCB monitoring is not required. Sampling for solids and metals is required during the **2024** calendar year. Requirements for land application of municipal sludge are determined in accordance with ch. NR 204 Wis. Adm. Code. Ceiling and high-quality limits for metals in sludge are specified in s. NR 204.07(5).

Explanation of Limits and Monitoring Requirements

6 Compliance Schedules

6.1 Groundwater Monitoring Well Site Map Submittal

Required Action	Due Date
Monitoring Well Site Map: Submit a site map in accordance with s. NR 141.065, Wis. Adm. Code. All monitoring well locations shall be reported to the department on a plan map drawn to a specific scale. The map shall indicate structure boundaries, property boundaries, any nearby surface waters and a north arrow. The plan shall show the wells in relation to each other, to property and structure boundaries and to a common reference point on a horizontal grid system. The origin of the grid system shall be located according to latitude and longitude or according to the state plane coordinate system. The exact vertical location of the top of the well casing shall be referenced to the nearest benchmark for the national geodetic survey datum to an accuracy of 0.01 feet. This plan map shall	03/31/2023

show the exact location of the installed well on a horizontal grid system which is accurate to within 1 foot.	

Explanation of Compliance Schedules

Accurate well information is needed to ensure the requirements of NR 140 Wis. Adm. Code are met.

Attachments:

Water Flow Schematic

"City of Spooner – Land Disposal System Evaluation Report – WPDES Permit # WI-0021067" memo dated November 16, 2021

Proposed Expiration Date:

March 31, 2027

Justification Of Any Waivers From Permit Application Requirements

N/A

Prepared By:

Sheri A. Snowbank Wastewater Specialist

Date: January 14, 2022

cc: Arthur Ryzak, WDNR- Ladysmith